

Compact Robust Integrated PPM Laser Transceiver Chip Set with High Sensitivity, Efficiency, and Re-Configurability

Completed Technology Project (2016 - 2019)



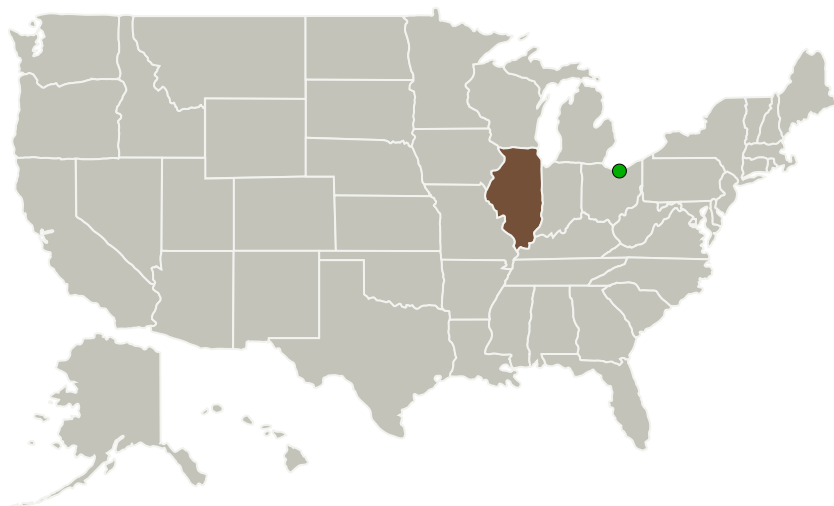
Project Introduction

The key to enabling space optical communications with high efficiency and enhanced capabilities is by developing transceivers on monolithically integrated chips with high robustness, enhanced data-transmitting capabilities, higher functionalities, and lower costs. The Department of Electrical Engineering and Computer Science, Northwestern University, and OptoNe Inc. will realize a pulse-position modulation (PPM) monolithically integrated laser transmitter chip and two matching receiver chips with high robustness, multi-function capabilities, novel re-configurability, high signal sensitivity, high data rates, and good power efficiency. Such a compact robust integrated PPM laser transceiver chip set will enable significant advancements in space optical communications and will also benefit the photonic integration technology area in general with various commercial application potentials.

Anticipated Benefits

Such a compact robust integrated PPM laser transceiver chip set will enable significant advancements in space optical communications and will also benefit the photonic integration technology area in general with various commercial application potentials.

Primary U.S. Work Locations and Key Partners



Compact Robust Integrated PPM Laser Transceiver Chip Set with High Sensitivity, Efficiency, and Re-Configurability

Table of Contents

Project Introduction	1
Anticipated Benefits	1
Primary U.S. Work Locations and Key Partners	1
Project Website:	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destination	3

Compact Robust Integrated PPM Laser Transceiver Chip Set with High Sensitivity, Efficiency, and Re-Configurability

Completed Technology Project (2016 - 2019)



Organizations Performing Work	Role	Type	Location
Northwestern University	Lead Organization	Academia	Evanston, Illinois
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations

Illinois

Project Website:

<https://www.nasa.gov/strg#.VQb6T0jJzyE>

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Northwestern University

Responsible Program:

Space Technology Research Grants

Project Management

Program Director:

Claudia M Meyer

Program Manager:

Hung D Nguyen

Principal Investigator:

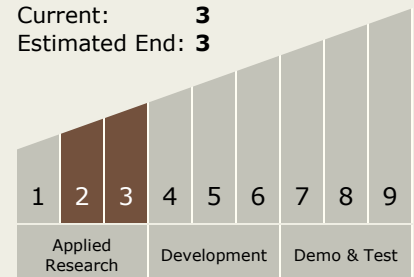
Seng-tiong Ho

Technology Maturity (TRL)

Start: 2

Current: 3

Estimated End: 3



Compact Robust Integrated PPM Laser Transceiver Chip Set with High Sensitivity, Efficiency, and Re-Configurability

Completed Technology Project (2016 - 2019)



Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.1 Optical Communications
 - └ TX05.1.3 Lasers

Target Destination

Earth